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Patent

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Leah Grinnage

(Type Name of Person Mailing Paper or Correspondence)

 Leah M. Grinnage
Signature

October 29, 2001

Date

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Nobuo Miyachi)	
)	
Serial No.:	Unknown (Divisional of)	Examiner: Unknown
	Serial No. 09/476,956)	
	Filed January 3, 2000)	Group Art Unit: Unknown
)	
Filed:	October 29, 2001)	

Title: BIODEGRADABLE BLOCK FOR MODELS

Commissioner for Patents and Trademarks
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Sir:

In the Claims:

Please cancel claims 1-12.

Please add the following new claims:

13. A method for producing a biodegradable block for models, comprising the steps of:

placing said biodegradable plastic material into a mold;
melting said biodegradable plastic material in said mold using heat; and
shaping said biodegradable plastic material in said mold under compression.

14. The method of claim 13 wherein said desired form comprises pellets.
- 5 15. The method of claim 13 wherein said desired form comprises powder.
16. The method of claim 13 further comprising the step of kneading said biodegradable polymer with at least one of an ester plasticizer in an amount of about 35% by weight or less and a filler in an amount of about 50% by weight or less.
17. The method of claim 16 wherein said filler comprises an organic material.
18. The method of claim 16 wherein said filler comprises an inorganic material.
19. The method of claim 13 wherein said biodegradable polymer comprises (a) an esterified starch having a degree of substitution (DS) of about 0.4 or more and (b) an esterified cellulose having a DS of about 0.4 or more, in a ratio by weight (a)/(b), of from 10/0 to 1/9.
20. The method of claim 19 wherein said esterified starch comprises at least one of the following:
 - (1) an esterified starch prepared by esterifying a starch with an esterifying reagent of a vinyl ester in a non-aqueous organic solvent in the presence of an esterification catalyst;
 - (2) an esterified, polyester-grafted starch which is formed by esterifying starch and grafting starch with polyester; and

(3) a mixed esterified starch of which hydrogen in the reactive hydroxyl group of the same starch molecule is substituted with an acyl group that has from 2 to 4 carbon atoms (*i.e.*, a short chain acyl group) and an acyl group that has from 6 to 18 carbon atoms (*i.e.*, a long chain acyl group).

5. 21. The method of claim 19, wherein said esterified starch contains a starch ester having a DS of about 1.0 to 2.8, which is produced by a process wherein a purified starch containing at least 50% of amylose is reacted with an acylation reagent in the presence of a basic catalyst in an anhydrous aprotic solvent.

10. 22. The method of claim 19, wherein said esterified starch is one as prepared from a high-amylose starch having an amylose content of about 50% by weight or higher.

15. 23. The method of claim 19, wherein said esterified starch has a DS of about 1.0 to 2.8.

24. The method of claim 19, wherein said biodegradable plastic material comprises a mixture of said biodegradable polymer and biodegradable polyester.

25. The method of claim 19, wherein said biodegradable plastic material contains, as a side component, an ester plasticizer in an amount of about 35% by weight or smaller, to have a glass transition temperature falling between about 65 °C and about 120 °C.

20. 26. The method of claim 19, wherein said biodegradable plastic material contains an organic or inorganic filler in an amount of about 50% by weight or smaller to have predetermined dimension stability, heat resistance and strength.

27. The method of claim 26, wherein said organic filler is cellulosic fiber.

28. The method of claim 27, wherein said cellulosic fiber is cellulosic microfiber having a mean length (L) of from about 20 to about 750 μm , and a mean diameter (D) of from about 5 to about 80 μm , wherein the ratio L/D is in the range of about 3 to about 60.

29. A method of producing a biodegradable model, comprising the step of cutting or machining the biodegradable block of claim 13 with hand tools or machine tools.

REMARKS

A divisional application and a petition under 37 CFR 1.136(a) for a two-month extension of time and the appropriate fee are submitted herewith.

Respectfully submitted,



Mark P. Vrla
Mark P. Vrla
Registration No. 43,973

Jenner & Block, LLC
One IBM Plaza
Chicago, IL 60611

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